

REMARKS

These amendments and remarks are being filed in response to the Office Action dated December 29, 2005. For the following reasons this application should be allowed and the case passed to issue.

No new matter is introduced by this amendment. The amendments to claims 1, 2, and 3 are supported throughout the specification including page 9, line 32. The amendments to the specification correct informalities.

Claims 1-11 are pending in this application. Claims 4-11 have been withdrawn pursuant to a restriction requirement. Claims 1-3 are rejected. Claims 1-3 have been amended.

Restriction Requirement

Upon the allowance of any of mask claims, Applicants respectfully request rejoinder, examination, and allowance of withdrawn method claims 4-11 in accordance with the rejoinder provisions of MPEP § 821.04.

Objections to the Specification

The specification was objected to because several sentences were awkwardly worded. The objections are traversed, and reconsideration and withdrawal thereof respectfully requested.

The specification has been amended to address the Examiner's objections.

Claim Rejections Under 35 U.S.C. §§ 102 and 103

Claims 1 and 3 are rejected under 35 U.S.C. § 102(e) as being anticipated by Nakayama (U.S. Patent No. 6,821,686).

Claims 1-3 are rejected under 35 U.S.C. 35 § 103(a) as obvious over Nakayama.

These rejections are traversed, and reconsideration and withdrawal thereof respectfully requested. The following is a comparison between the invention, as claimed, and the cited prior art.

An aspect of the invention, per claim 1, is a half tone phase shift mask comprising a transparent substrate, a semitransparent film or shading film provided on the transparent substrate, and a clear defect portion being a missing portion of a complete pattern that should be formed when it is assumed that the semitransparent film or shading film is completely well formed. A shading portion, having a transmissivity of 0 to 2% or 2 to 6%, is provided in the clear defect portion. A semitransparent portion having a transmissivity larger than that of the shading portion is formed at the peripheral portion of the shading portion.

The Examiner asserted that Nakayama teaches the claimed limitations including a method of repairing a clear area defect. The Examiner acknowledged that Nakayama does not disclose that the semitransparent portion is formed to extend from an area inside of the complete pattern to an area outside of it perpendicular to a main surface of the transparent substrate. The Examiner averred that it is known in the art that uses Optical Proximity Correction (OPC) with semitransparent masks to incorporate the use of semitransparent features in conjunction with the main pattern in order to produce the desired exposure effect. The Examiner further asserted that the prior art teaches the importance of having the transmission adjusting feature proximate to the main pattern, although it may not designate the perpendicular direction specifically. The Examiner concluded that it would have been obvious to combine OPC design with Nakayama because the incorporation of a semitransparent feature that extends in a perpendicular direction from the main pattern would be an obvious design choice in that this is the region where the optical effect of the interference of light with the main pattern is to be corrected.

Nakayama, however, does not disclose or suggest the claimed half tone phase shift mask. The claimed half tone phase shift mask clearly differs from a gray tone mask disclosed by Nakayama in configuration and effect.

A half tone phase shift mask is used to make the contour of an optical intensity corresponding to the pattern edge of a half tone film conspicuous, as described in the paragraph beginning on line 15 of page 2 of the instant specification. A gray tone mask, on the other hand, is used to form a thinner film in an area corresponding to a gray tone than that in another area without the gray tone. Further, the half tone phase shift mask has a semitransparent portion for correcting a clear defect while the gray tone mask has a specific pattern as a gray tone portion for correcting a clear defect.

The margin of the arrangement of the semitransparent portion of the half tone phase shift mask can be made larger than the margin of the arrangement of a shading portion as described in the specification on page 4, lines 20-26. On the other hand, using a gray tone mask, a defect can be easily corrected in an area corresponding to the gray tone portion.

For the Examiner's convenience, profiles of the optical intensity of a half tone phase shift mask and a gray tone mask are attached to this paper. The differences in the effect of a half tone phase shift mask and gray tone mask are clearly illustrated in the optical intensity profiles.

The factual determination of lack of novelty under 35 U.S.C. § 102 requires the disclosure in a single reference of each element of a claimed invention. *Helifix Ltd. v. Blok-Lok Ltd.*, 208 F.3d 1339, 54 USPQ2d 1299 (Fed. Cir. 2000); *Electro Medical Systems S.A. v. Cooper Life Sciences, Inc.*, 34 F.3d 1048, 32 USPQ2d 1017 (Fed. Cir. 1994); *Hoover Group, Inc. v. Custom Metalcraft, Inc.*, 66 F.3d 399, 36 USPQ2d 1101 (Fed. Cir. 1995); *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 24 USPQ2d 1321

(Fed. Cir. 1992); *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051 (Fed. Cir. 1987). Because Nakayama does not disclose a half tone phase shift mask as required by claim 1, Nakayama does not anticipate claim 1.

Obviousness can be established only by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992); *In re Fine*, F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Although a reference can be modified, the prior art must suggest the desirability of modifying a reference. See *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). There is no suggestion in Nakayama to modify the gray tone mask to produce a half tone phase shift mask, as required by claim 1. Applicants submit that the section 103 rejection should be withdrawn.

The requisite motivation to support the ultimate legal conclusion of obviousness under 35 U.S.C. § 103 is not an abstract concept, but must stem from the applied prior art as a whole and realistically impel one having ordinary skill in the art to modify a specific reference in a specific manner to arrive at a specifically claimed invention. *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995); *In re Newell*, 891 F.2d 899, 13 USPQ2d 1248 (Fed. Cir. 1989). Accordingly, the Examiner is charged with the initial burden of identifying a source in the applied prior art for the requisite realistic motivation. *Smiths Industries Medical System v. Vital Signs, Inc.*, 183 F.3d 1347, 51 USPQ2d 1415 (Fed. Cir. 1999); *In re Mayne*, 104 F.3d 1339, 41 USPQ2d 1449 (Fed. Cir. 1997). There is no motivation in Nakayama to form a half tone phase shift mask, as required by claim 1.

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The dependent claims are allowable for at least the same reasons as independent claim 1, and further distinguish the claimed half tone phase shift mask.

In view of the above amendments and remarks, Applicants submit that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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